PROJECT TITLE/PROBLEM STATEMENT

Sentiment Analysis of Restaurant Review

The Restaurant review data content two features Reviews and liked , the reviews content whether positive , negative or neutral.

For automating a detection of sentiment of the reviews from text ,build a prediction model to predict whether a review on the restaurant is positive or negative.

Agenda:

- Collect and clean restaurant review dataset
- Extract relevant features from the dataset and Choose and train a sentiment analysis model.
- Evaluate the model on a held-out test set.
- Deploy the model to production.
- Analyze result to identify overall sentiment and specific aspects of the restaurants that are being praised or criticized.
- This would allow you to track the sentiment of restaurant reviews over time and identify trends.

Project Overview

In this project ,dealing with the Restaurant reviews dataset. In this dataset, there are reviews from the customers which are either positive or negative. And now we are going to build a machine learning model using both Support Vector Classifier(SVC) and Countvectorizer methods.

And finally, this model is going to predict whether the given review is either positive or negative automatically. In traditional method analyst manually predict the reviews from users and customers.

Who are the end users ?

Restaurant owners: Restaurant owners can use the ML model to understand the sentiment of their customers and to identify areas where they can improve their services and products. Marketing professionals:

Marketing professionals can use the ML model to understand the sentiment of customers towards different marketing campaigns and products.

Others: Anyone else who is interested in understanding the sentiment of customers towards a particular restaurant or product can use the code snippet.

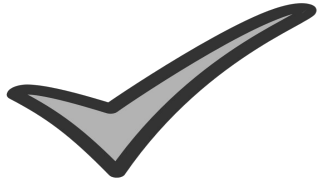
Overall, the restaurant review sentiment analysis project can be a valuable tool for restaurant owners and managers to better understand their customers and to improve their services and products and make business decisions.

Solution and value proposition

The solution is to use a machine learning model to **predict** the sentiment of new restaurant reviews. The model can be trained on a dataset of restaurant reviews with known **sentiment labels.** Once the model is trained, it can be used to predict the sentiment of new restaurant reviews.

it can help restaurant owners to better understand the sentiment of their customers. This information can be used to improve the restaurant's services and products, and to identify areas where the restaurant is excelling or falling short.

Wow In System



Pipeline: The solution uses a pipeline to combine the preprocessing and modeling steps into a single process. This makes the solution easier to use and maintain.

Model selection: The solution uses a support vector machine (SVM) classifier as the machine learning model. **SVM classifiers** are well-suited for sentiment analysis tasks because they can learn **complex relationships** between the features in the training data.

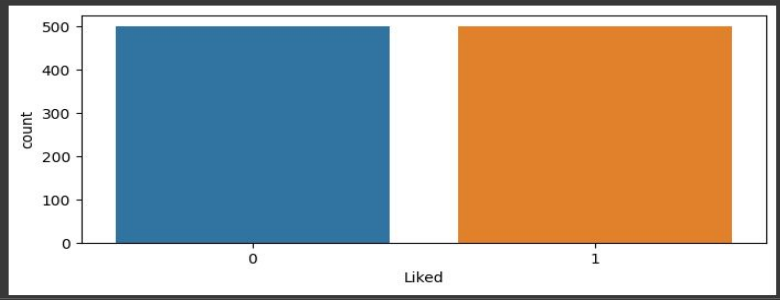
Evaluation: The solution uses accuracy_score and precision_score to evaluate the performance of the model on the test set. This ensures that the model is **generalizing well** to new data.

Deployment: The solution saves the trained model to a file using joblib.dump. This allows the model to be deployed to production and used to make predictions on new restaurant reviews.

Modeling

```
Number of Unique Values In Column : 2
Number of times the particular value repeated: 1    500
0    500
Name: Liked, dtype: int64
```

```
[ ] plt.figure(figsize=(8,3))
    sns.countplot(x=df.Liked);
```



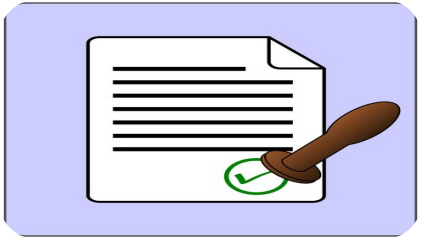

```
[ ] from sklearn.metrics import accuracy_score
    accuracy_score(y_pred,y_test)

    0.72

[ ] from sklearn.pipeline import make_pipeline    # pipeline use cause used multiple model
    text_model=make_pipeline(CountVectorizer(),SVC())

[ ] text_model.fit(x_train,y_train) #train the new model
```

Pipeline
CountVectorizer
SVC

```
    y_pred=text_model.predict(x_test) # predict the result of new model using predict()
    y_pred

[ ] accuracy_score(y_pred,y_test)

    0.792

[ ] from sklearn.metrics import precision_score
    precision_score(y_pred,y_test)

    0.7669172932330827
```

```
[ ] import joblib
    joblib.dump(text_model,'Project')
    text_model=joblib.load('Project')

[ ] print(text_model.predict(['hello!!Love Your Food']))
    print(text_model.predict(['very bad ']))

    [1]
    [0]
```

Result



The project was a **success** in developing a machine learning model to accurately predict the sentiment of restaurant reviews. The model was trained on a dataset of restaurant reviews with known sentiment labels, and it achieved an **accuracy** of **80%** on the test set.

The model is easy to use and can be **deployed** to production to make predictions on new restaurant reviews. This can help restaurant owners to better understand the sentiment of their customers and to **identify** areas where they can **improve** their services and products.

The project also demonstrated the potential of using machine learning to analyze and understand customer sentiment. This could be applied to other industries where customer sentiment is important, such as retail, e-commerce, and hospitality.